AMENDMENTS TO THE CLAIMS

1. (Original) A device for binding cells or molecules, wherein the device comprises:

(a) a body defining a first surface and a second surface that is located opposite to the first surface;

(b) a heater disposed upon the first surface; and

(c) a temperature-responsive layer disposed upon the second surface, wherein the temperature-responsive layer comprises a temperature-responsive material that can exist in a first state that binds molecules or living cells, and can exist in a second state that binds substantially less molecules or living cells than the first state, and wherein the temperature-responsive material is reversibly convertible to the first state from the second state in response to an effective amount of thermal energy.

2. (Original) The device of Claim 1 wherein the body consists essentially of a material selected from the group consisting of glass, silicon, mica, quartz, sapphire, and poly(ethyleneterephthalate).

3. (Original) The device of Claim 1 wherein the body has a thickness in the range of from 0.0001 mm to 2 mm.

4. (Original) The device of Claim 1 wherein the first surface and the second surface each have an area in the range of from 1 mm^2 to 5 cm^2.

5. (Original) The device of Claim 1 wherein the device comprises a longest dimension in the range of from 1.0 mm to 5.0 cm.

6. (Original) The device of Claim 1 wherein the first surface and the second surface are both rectangular.

7. (Original) The device of Claim 1 wherein the first surface and the second surface are both square.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

8. (Currently amended) The device of Claim 1 wherein the temperature-responsive material is selected from the group consisting of poly(N-isopropylacrylamide), poly(*N*,*N*-dimethylacrylamide), poly(ethylacrylamide), poly(N-ethylmethacrylamide), poly[*N*-(3-ethoxypropyl)acrylamide], poly[*N*-(2-hydroxypropyl)methacrylamide], poly(N-vinylisobutyramide), poly(N-vinylacetamide), a copolymer of methoxy poly(ethylene glycol) and poly(propylene fumarate), a vinyl ether of ethylene glycol, hydroxypropylcellulose, ethyl hydroxyethyl cellulose, methyl cellulose, poly(vinyl methyl ether), butyl vinyl ether, polyglycidol, acryloyl-L-proline methyl ester, a vinyl pyrrolidone and vinyl acetate copolymer, a copolymer of N-acryloyl-N'-alkyl piperazine and methyl methacrylate, poly(methyl 2-propionamidoacrylate), poly(acrylic acid), poly(acrylamide-co-butyl methacrylate), poly(organophosphazenes), poly(2-ethyl-2-oxazoline), gelatin, poly(N-vinylcaprolactam), elastin, elastin mimetic polypeptide, 2,4,6-trimethylpyridine and poly(N-vinylpyrrolidone).

9. (Original) The device of Claim 1 wherein the temperature-responsive material consists essentially of poly (N-isopropylacrylamide).

10. (Original) The device of Claim 1 wherein multiple heaters are disposed upon the first surface.

11. (Original) The device of Claim 1 wherein at least one living cell is attached to a portion of the temperature-responsive layer located opposite the heater.

12. (Original) The device of Claim 1 wherein protein molecules are attached to a portion of the temperature-responsive layer located opposite the heater.

13. (Original) The device of Claim 12 wherein the protein molecules are antibody molecules.

14. (Original) The device of Claim 10 wherein the multiple heaters comprise a first population of heaters and a second population of heaters, and the temperature-responsive layer comprises a first population of portions, located opposite the first population of heaters, and a

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

second population of portions, located opposite the second population of heaters, wherein a first type of living cell is attached to the first population of portions, and a second type of living cell is attached to the second population of portions.

15. (Original) The device of Claim 10 wherein the multiple heaters comprise a first population of heaters and a second population of heaters, and the temperature-responsive layer comprises a first population of portions, located opposite the first population of heaters, and a second population of portions, located opposite the second population of heaters, wherein a first type of protein molecules is attached to the first population of portions, and a second type of protein molecules is attached to the second population of portions.

16. (Original) A method for binding molecules or living cells to a temperature-responsive material, wherein the method comprises the steps of contacting a temperature-responsive material with a population of molecules or a population of living cells, wherein:

(a) the temperature-responsive material can exist in a first state that binds molecules or living cells, and can exist in a second state that binds substantially less molecules or living cells than the first state, and wherein the temperature-responsive material is reversibly convertible to the first state from the second state in response to an effective amount of thermal energy; and

(b) the temperature-responsive material exists in the first state when the temperature-responsive material is contacted with the population of molecules or living cells, thereby effecting binding of the molecules or living cells to the temperature-responsive material.

17. (Original) The method of Claim 16 wherein molecules are bound to the temperature-responsive material.

18. (Original) The method of Claim 17 wherein the molecules are proteins.

19. (Original) The method of Claim 18 wherein the proteins are antibodies.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

20. (Original) The method of Claim 16 wherein living cells are bound to the temperature-responsive material.

21. (Currently amended) The method of Claim 16 wherein the temperature-responsive material is selected from the group consisting of poly(N-isopropylacrylamide), poly(*N*,*N*-dimethylacrylamide), poly(ethylacrylamide), poly(N-ethylmethacrylamide), poly[*N*-(3-ethoxypropyl)acrylamide], poly[*N*-(2-hydroxypropyl)methacrylamide], poly(N-vinylisobutyramide), poly(N-vinylacetamide), a copolymer of methoxy poly(ethylene glycol) and poly(propylene fumarate), a vinyl ether of ethylene glycol, hydroxypropylcellulose, ethyl hydroxyethyl cellulose, methyl cellulose, poly(vinyl methyl ether), butyl vinyl ether, polyglycidol, acryloyl-L-proline methyl ester, a vinyl pyrrolidone and vinyl acetate copolymer, a copolymer of N-acryloyl-N'-alkyl piperazine and methyl methacrylate, poly(methyl 2-propionamidoacrylate), poly(acrylic acid), poly(acrylamid-co-butyl methacrylate), poly(organophosphazenes), poly(2-ethyl-2-oxazoline), gelatin, poly(N-vinylcaprolactam), elastin, elastin mimetic polypeptide, 2,4,6-trimethylpyridine and poly(N-vinylpyrrolidone).

22. (Original) The method of Claim 16 wherein the temperature-responsive material consists essentially of poly (N-isopropylacrylamide).

23. (Original) The method of Claim 16 wherein the temperature-responsive material is heated to a temperature between 32°C and 40°C so that the temperature-responsive material exists in the first state.

24. (Original) The method of Claim 16 wherein the temperature-responsive material forms a layer on a surface of a device body.

25. (Original) The method of Claim 24 wherein the device body defines a first surface and a second surface that is located opposite the first surface, wherein a heater is disposed upon the first surface, the temperature-responsive material forms a layer on the second

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

surface, and the heater heats the temperature-responsive material so that the temperature-responsive material exists in the first state and binds the molecules or living cells.

26. (Original) A method for binding more than one type of molecule or more than one type of living cell to a temperature-responsive material, wherein the method comprises the steps of:

(a) contacting a temperature-responsive material with a first type of molecules or a first type of living cells, wherein the temperature-responsive material is attached to a device body wherein the device body defines a first surface and a second surface that is located opposite the first surface, wherein a first population of heaters and a second population of heaters are disposed upon the first surface, and wherein the temperature-responsive material forms a temperature-responsive layer on the second surface;

(b) activating the first population of heaters to heat a first population of temperature-responsive layer portions, located on the second surface opposite the first population of heaters, so that the first type of molecules or the first type of living cells binds to the first population of temperature-responsive layer portions, said activation occurring before or during the contacting of the temperature-responsive material with the first type of molecules or the first type of living cells;

(c) removing any of the first type of molecules or the first type of living cells that are not bound to the first population of temperature-responsive layer portions;

(d) contacting the temperature-responsive material with a second type of molecules or a second type of living cells;

(e) activating the second population of heaters to heat a second population of temperature-responsive layer portions, located on the second surface opposite the second population of heaters, so that the second type of molecules or the second type of living cells binds to the second population of temperature-responsive layer portions, said activation occurring before or during the contacting of the temperature-responsive material with the second type of molecules or the second type of living cells; and

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

(f) removing any of the second type of molecules or the second type of living cells that are not bound to the second population of temperature-responsive layer portions.

27. (Original) The method of Claim 26 wherein a first type of protein is bound to the first population of temperature-responsive layer portions, and a second type of protein is bound to the second population of temperature-responsive layer portions.

28. (Original) The method of Claim 27 wherein the first type of protein and the second type of protein are both antibodies.

29. (Original) The method of Claim 26 wherein a first type of living cell is bound to the first population of temperature-responsive layer portions, and a second type of living cell is bound to the second population of temperature-responsive layer portions.

30. (Original) The method of Claim 26 wherein a first type of living cell is bound to the first population of temperature-responsive layer portions, and a second type of living cell is bound to the second population of temperature-responsive layer portions, wherein the first population of heaters remains activated while the second population of heaters are activated.

31. (Original) A method for measuring a response of a population of living cells to an agent, wherein the method comprises the steps of contacting a population of living cells with an agent and measuring a response of the living cells to the agent, wherein the living cells are attached to a temperature-responsive material that can exist in a first state that binds living cells, and can exist in a second state that binds substantially less living cells than the first state, wherein the temperature-responsive material is reversibly convertible to the first state from the second state in response to an effective amount of thermal energy, and wherein the temperature-responsive material exists in the first state while the living cells are contacted with the agent.

32. (Currently amended) The method of Claim 31 wherein the temperature-responsive material is selected from the group consisting of poly(N-isopropylacrylamide), poly(*N*,*N*-dimethylacrylamide), poly(ethylacrylamide), poly(N-ethylmethacrylamide), poly[*N*-(3-

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

ethoxypropyl)acrylamide], poly[*N*-(2-hydroxypropyl)methacrylamide], poly(N-vinylisobutyramide), poly(N-vinylacetamide), a copolymer of methoxy poly(ethylene glycol) and poly(propylene fumarate), a vinyl ether of ethylene glycol, hydroxypropylcellulose, ethyl hydroxyethyl cellulose, methyl cellulose, poly(vinyl methyl ether), butyl vinyl ether, polyglycidol, acryloyl-L-proline methyl ester, a vinyl pyrrolidone and vinyl acetate copolymer, a copolymer of N-acryloyl-N'-alkyl piperazine and methyl methacrylate, poly(methyl 2-propionamidoacrylate), poly(acrylic acid), poly(acrylamid-co-butyl methacrylate), poly(organophosphazenes), poly(2-ethyl-2-oxazoline), gelatin, poly(N-vinylcaprolactam), elastin, elastin mimetic polypeptide, 2,4,6-trimethylpyridine and poly(N-vinylpyrrolidone).

33. (Original) The method of Claim 31 wherein the temperature-responsive material consists essentially of poly (N-isopropylacrylamide).

34. (Original) The method of Claim 31 wherein the temperature-responsive material forms a layer on a surface of a device body.

35. (Original) The method of Claim 34 wherein the device body defines a first surface and a second surface that is located opposite the first surface, wherein a heater is disposed upon the first surface, and the temperature-responsive material forms a layer on the second surface.

36. (Original) The method of Claim 31 wherein a multiplicity of different cell types are attached to the temperature-responsive material and are each contacted with the agent, wherein each different cell type is attached to a different portion of the temperature-responsive material.

37. (Original) The method of Claim 35 wherein a multiplicity of different cell types are attached to the temperature-responsive layer and are each contacted with the agent, wherein each different cell type is attached to a different portion of the temperature-responsive layer.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

38. (Original) A method for observing the binding of members of a binding pair, wherein the method comprises the steps of contacting a first member of a binding pair with a second member of a binding pair and observing the binding of the first member of the binding pair with the second member of the binding pair, wherein the first member of the binding pair is attached to a temperature-responsive material that can exist in a first state that binds the first member of the binding pair, and can exist in a second state that binds substantially less first member of the binding pair than the first state, wherein the temperature-responsive material is reversibly convertible to the first state from the second state in response to an effective amount of thermal energy, and wherein the temperature-responsive material exists in the first state while the first member of the binding pair is contacted with the second member of the binding pair.

39. (Original) The method of Claim 38 wherein the first member of the binding pair is an antibody, and the second member of the binding pair is an antigen to which the antibody binds.

40. (Original) The method of Claim 38 wherein the first member of the binding pair is an antigen, and the second member of the binding pair is an antibody that binds to the antigen.

41. (Original) The method of Claim 38 wherein the first member of the binding pair is an enzyme, and the second member of the binding pair is a substrate for the enzyme.

42. (Original) The method of Claim 38 wherein the first member of the binding pair is a substrate for an enzyme, and the second member of the binding pair is the enzyme that utilizes the substrate.

43. (Currently amended) The method of Claim 38 wherein the temperature-responsive material is selected from the group consisting of <u>poly(N-isopropylacrylamide),</u> poly(*N*,*N*-dimethylacrylamide), poly(ethylacrylamide), poly(N-ethylmethacrylamide), poly[*N*-(3-ethoxypropyl)acrylamide], poly[*N*-(2-hydroxypropyl)methacrylamide], poly(N-vinylisobutyramide), poly(N-vinylacetamide), a copolymer of methoxy poly(ethylene glycol)

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

and poly(propylene fumarate), a vinyl ether of ethylene glycol, hydroxypropylcellulose, ethyl hydroxyethyl cellulose, methyl cellulose, poly(vinyl methyl ether), butyl vinyl ether, polyglycidol, acryloyl-L-proline methyl ester, a vinyl pyrrolidone and vinyl acetate copolymer, a copolymer of N-acryloyl-N'-alkyl piperazine and methyl methacrylate, poly(methyl 2-propionamidoacrylate), poly(acrylic acid), poly(acrylamid-co-butyl methacrylate), poly(organophosphazenes), poly(2-ethyl-2-oxazoline), gelatin, poly(N-vinylcaprolactam), elastin, elastin mimetic polypeptide, 2,4,6-trimethylpyridine and poly(N-vinylpyrrolidone).

44. (Original) The method of Claim 43 wherein the temperature-responsive material consists essentially of poly (N-isopropylacrylamide).

45. (Original) The method of Claim 38 wherein the temperature-responsive material forms a layer on a surface of a device body.

46. (Original) The method of Claim 45 wherein the device body defines a first surface and a second surface that is located opposite the first surface, wherein a heater is disposed upon the first surface, and the temperature-responsive material forms a layer on the second surface.

47. (Original) The method of Claim 38 wherein a multiplicity of different first members of a multiplicity of different binding pairs are attached to the temperature-responsive material and are contacted with a multiplicity of different second members of the multiplicity of different binding pairs, wherein each different first member of the multiplicity of different binding pairs is attached to a different portion of the temperature-responsive material.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100